

REMARKS

Claims 1-4, 6-15 and 18 are pending. Claim 1 has been amended, without prejudice, to further clarify the inventive features; claims 5, 17 and 19 are canceled. Claims 13-15 have been allowed.

Advantages and Problem Solved by the Claimed Invention

Martucci discloses a process whereby a tube is fixed to a **tube sheet**. The filler metal is placed inside a hole provided in the sheet, which is a plate and thus does not enclose an inside cavity. Thus, the filler metal may be placed inside a hole, provided that the thickness of the plate permits this, but not into the inside cavity, which only a tubular part as recited in the pending claim 1 possesses. The advantages of the present invention have already been previously discussed: in addition to a better distribution of the filler metal in the brazed joint, the placing of the filler inside the tubular part avoids that an excess of filler metal is visible on the end product or, worse, drips into the furnace when melted. This cannot be avoided in the process of Martucci, while, according to the present invention, an excess of filler metal might drip inside the tubular part and solidify on the internal surface without affecting the appearance of the final product or damage the furnace.

Another advantage over the method disclosed by Martucci where the filler material is placed around the tube to be joined to the plate on the side thereof opposite to the end of the tube, contrarily to the teaching of present claim 1. Therefore, the melted metal may run, due to capillarity action, on the surface of the tube, in both directions, towards the plate and away from the plate. By positioning the filler metal on the same side of the end of the tube, which, when

joining the tube to a tubular part according the present invention, means in its inside cavity, the filler metal may only run towards the wall of the tubular part, where it is useful.

Claim Rejections Under 35 U.S.C. 102(b)

Claims 1-3, 6-8 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,496,629 to Martucci et al. (hereinafter “Martucci”). The rejection is respectfully traversed for at least the reasons which follow.

Independent claim 1, as amended, recites:

A brazing process to join two metal parts, said metal parts including (i) a tube (1) having an end (4) and (ii) a tubular metal part (3) delimiting an internal cavity, the tubular metal part having a lateral wall (2) with an inner wall surface, at least one opening in the lateral wall (2) communicating with said internal cavity, wherein the end (4) of said tube (3) is brazed into said hole, the process comprising the steps of:
positioning a brazing filler metal (5,6) on the end (4) of said tube (3);
fixedly aligning the metal parts to be joined with the portion of the metal tube (1) with said filler metal positioned within said internal cavity proximate the inner wall surface, prior to melting;
heating said metal parts to a temperature at which the filler metal melts,
whereby a brazed joint is formed between the two metal parts.

The present amendments to claim 1 are in response to the Examiner’s observation in the outstanding office action that the points of novelty that are supported the patentability of claim 1 where not recited as limitations.

As now defined in claim 1, the tubular metal part (3) has a lateral wall (2) and an inner wall (See FIG. 4) and the tube (1) to be joined with the tubular metal part (3) has an end on which a brazing filler metal is positioned. As recited in claim 1, said “filler metal is positioned within said internal cavity [of] said tubular metal part (3) proximate the inner wall surface prior to melting” to thereby be in proximity to the junction of the tube and the metal part to be brazed. The subsequent “heating said metal parts” draws said filler metal “by capillary action into the clearance space in said junction once melted”. (See specification, page 7, lines 10-16)

Contrary to the reliance on Sections 102 and or 103 of the statute, Martucci neither describes the above limitations amended in claim 1, nor suggests such limitations. According to

Martucci, the brazing material 12 is positioned on the external side of the tube sheet 14, as shown in FIGS. 1-4. While the brazing material 12 can be received in the enlarged holes 18, it is impossible to pass through the whole length of the holes 18 to reach the inside of the tube sheet 14, at least before melting, as supported by the claim 1 of Martucci, which recites “applying heat to the brazing material until it is melted, and fills the void between the tube and tube sheet wall”. Thus, the junction formed between the tube 10 and the tube sheet 14 after heating is not inside the tube sheet 14, but on the external side of the tube sheet 14.

For at least foregoing reasons, it is respectfully submitted that independent claim 1 is patentable over Martucci. Claims 2-3, 6-8 and 18 are dependent on respectively, and contain all the limitations of, claims 1, and as such are submitted to be patentable for at least the same reason as claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding claim rejections under 35 U.S.C. §102(b).

Claim 12 Rejection Under 35 U.S.C. 103(a)

Applicant's arguments with respect to the rejection of claim 12 are set forth in our response of July 17, 2006 and are incorporated herein by reference. Reconsideration and withdrawal of the rejection under §103(a) are respectfully requested.

Conclusion

We believe that the novelty of present claim 1 over Martucci has been demonstrated. Its inventive step is due to the advantages discussed above, which the present invention brings about and the process according to Martucci does clearly not, and the fact that one skilled in the art,

would be lead, by the teachings of Martucci, to place the filler metal on the “wrong” side of the lateral wall, if he had to fix a tube into a hole of another tubular part.

Claim 1, as amended above, obviates the §102 rejection and overcomes any *prima facie* case of obviousness that may have been made out in the previous office action. All of the remaining rejected claims are dependent from claim 1, directly or indirectly, and are therefore also allowable. Applicant submits that the case is now in condition for allowance and prompt action to that end is respectfully requested.

In case of any deficiencies in fees occasioned by the filing of the present Amendment, the Commissioner is hereby authorized to charge such deficiencies in fees to Deposit Account Number 01-0035.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas E. Spath". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

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